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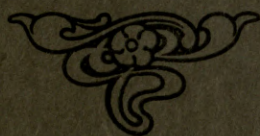
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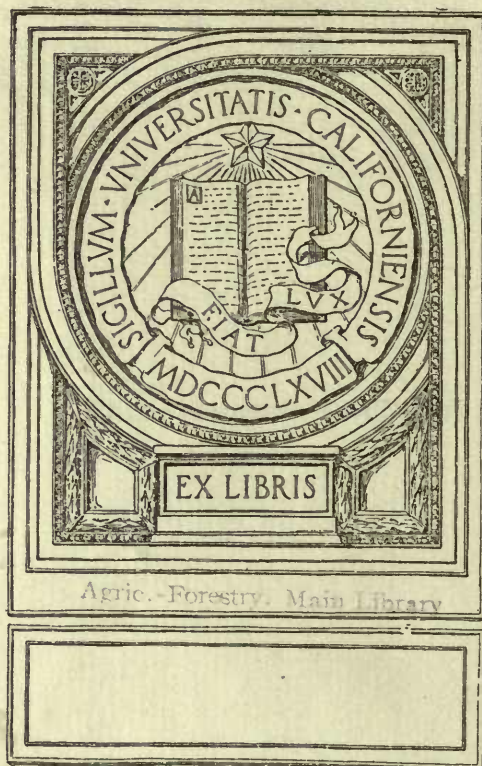
Important Facts

Regarding British Columbia Tidewater Timber



James D. Lacey & Co.
New York Chicago Seattle

November 1918



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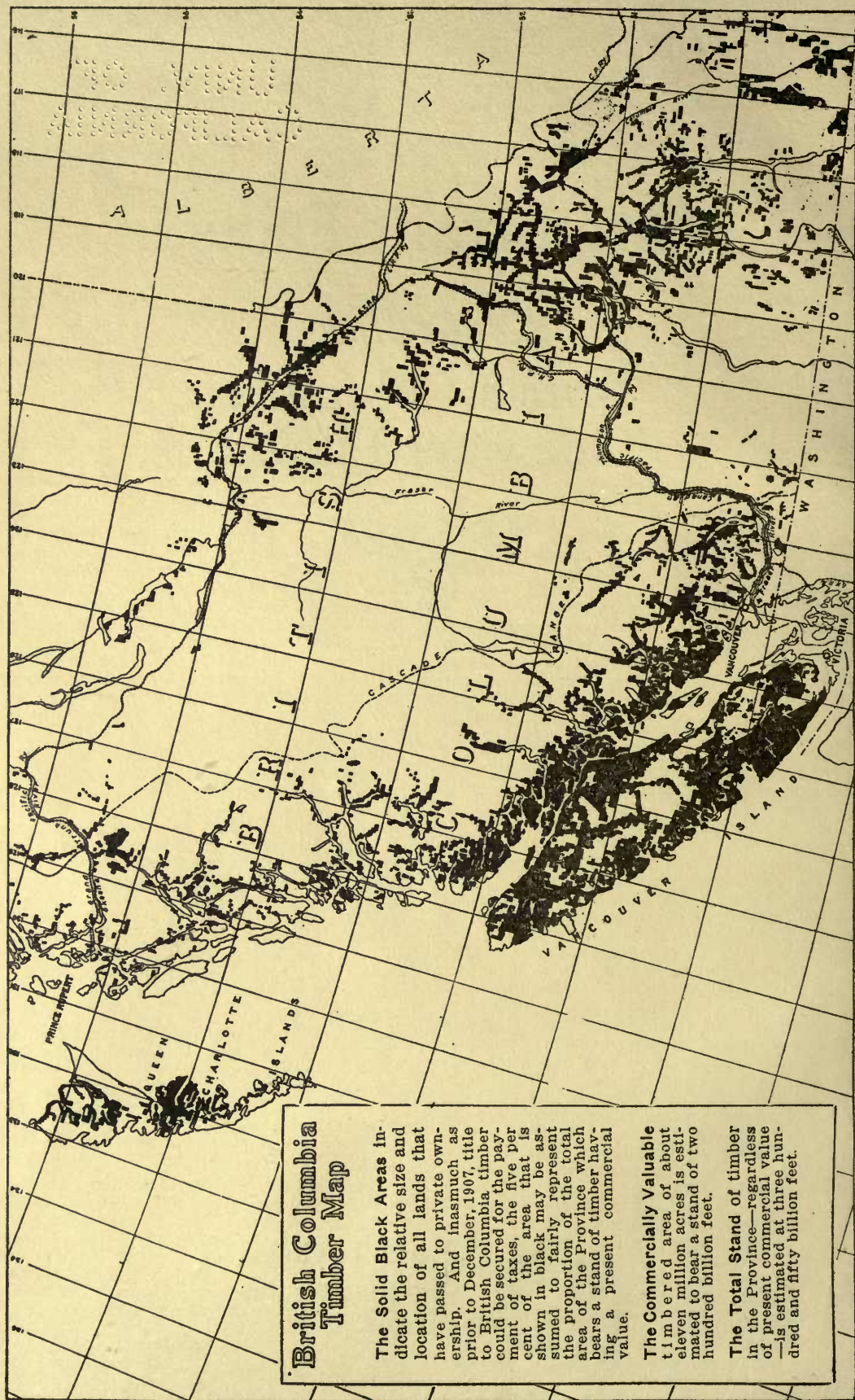


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British Columbia Timber Map

The Solid Black Areas indicate the relative size and location of all lands that have passed to private ownership. And inasmuch as prior to December, 1907, title to British Columbia timber could be secured for the payment of taxes, the five per cent of the area that is shown in black may be assumed to fairly represent the proportion of the total area of the Province which bears a stand of timber having a present commercial value.

The Commercially Valuable timbered area of about eleven million acres is estimated to bear a stand of two hundred billion feet.

The Total Stand of timber in the Province—regardless of present commercial value—is estimated at three hundred and fifty billion feet.

FOREST CONDITIONS

AN annual precipitation of over 50 inches, a temperature range rarely showing a monthly average below 35° or above 65°, together with a correspondingly long growing season, have provided Vancouver Island and the adjacent mainland with a coniferous forest which is equalled for density, rapidity of growth, amount of wood per acre, and individual tree development, only in the Coast regions of Oregon and Washington, where similar climatic conditions prevail.

The extent and distribution of this forest is well shown on the opposite page. The solid black areas indicate the relative size and location of all lands that have passed to private ownership. And, inasmuch as prior to December, 1907, title to British Columbia timber could be secured for the payment of one year's license fee in advance, the area shown in black, amounting to about 5% of the total area of the Province, may be assumed to fairly represent that portion of the Province which bears a stand of timber having a present commercial value.

It will be noticed from this map that the merchantable forest is most conspicuous on Vancouver Island and the adjacent mainland, and that it is almost entirely confined to the immediate sea coast and a few narrow strips extending up stream valleys. It will also be noticed that a considerable portion of the immediate sea coast, especially along the larger inlets extending into the Coast Range and along the unprotected shore front north of Vancouver Island, is destitute of commercially valuable timber.

In addition to the 5 per cent of commercially timbered lands as noted above, there is a 10 or 15 per cent of the area of the province that bears a forest growth that will eventually come to have commercial value as the prices of wood products increase and new ways are found to log more cheaply the lighter and less accessible stands of timber.

The cruising and mapping of the timberlands of British Columbia has not as yet progressed sufficiently to indicate closely the total stand of timber in the province. Tentatively, it may be placed as being in the vicinity of 350 billion feet, but of this total not more than 200 billion feet has been adjudged to have a present commercial value by being honored by purchase by private interests. And of this 200 billion about 60 billion feet would interest a logger on the basis of the lumber prices and costs of logging prevailing during the past five years.

The altitude limit of the commercially valuable forest varies progressively from about 3500 feet above sea level near Vancouver to less than 2000 feet in the vicinity of Broughton Island.

The composition of the forest varies somewhat with the altitude but chiefly with moisture conditions, which in turn are controlled both by the rainfall and the degree of exposure to the sun. Wherever the combination of rainfall and exposure together with a lack of protective measures by man, has in the past been such as to permit the occasional drying out of the forest to the extent of bringing about sweeping fires, the typical stand is of even-age, origin dating from a fire, and is made up of varying proportions of Douglas fir, hemlock and cedar, with occasional admixture of silver fir, spruce and white pine. Where this typical stand escapes fire for a period of about 400 years, the Douglas fir begins to drop out through lack of the favorable conditions for Douglas fir seed germination which seem to be provided only by the exposure of the mineral soil resulting from fire, and

thereafter the forest continues as an uneven-aged stand, the blanks being filled by reproduction of hemlock, cedar, and silver fir. Pure stands of hemlock are of frequent occurrence, especially at the higher elevations, and, occasionally, nearly pure stands of cedar are found. This Douglas fir type of forest is characteristic of the inside edge of Vancouver Island as far north as Salmon River, with local recurrences beyond as far as Nimpkish Lake. It coincides closely with the area most effectively sheltered from the heavy West Coast rainfall by the mountains of Vancouver Island. On the mainland and intervening islands this type occupies portions of the immediate shore front as far north as Cracroft Island, attaining its best development in small lake valleys close to tidewater such as those of the Gordon Pasha and Seabird Lakes.

Back up the narrow, high-walled and shady valleys of the lower mainland coast; along the shadier portions of the shore front slopes; at the higher elevations generally where the rainfall and more particularly the snowfall is comparatively heavy, and throughout that portion of the Sheltered Waters Region extending from Cracroft Island to Drury Inlet, which is beyond the full sheltering influence of Vancouver Island, the moisture conditions prohibit the development of the Douglas fir type and have developed a forest consisting almost entirely of cedar, hemlock and silver fir, with a scattering of spruce in places and with considerable yellow cedar at the higher elevations.

Douglas Fir: The fir is the most important tree on the southern portion of the British Columbia coast. It frequently exceeds 250 feet in height and reaches 15 feet in diameter. In general, however, it runs from 3 to 6 feet in diameter and cuts 140 to 200 lineal feet of logs to a tree. In quality of wood it resembles the southern yellow pine but, of course, gives much larger dimensions and a very much larger proportion of clear lumber.

Red Cedar: The cedar is found throughout the coast region and is the predominating species in the northern portion of the Sheltered Waters Region, where it commonly forms 70 to 80 per cent of the total stand of timber. It often reaches a height of 200 feet and averages 3 to 6 feet in diameter, though occasionally very much larger. The imminent exhaustion of the cedar forests of the east and the north

and the cypress forests of the south gives this, the finest of all the cedars, a commanding position in the markets of the continent. Already it supplies over 70 per cent of all the shingles used in Canada and the United States.

Western Hemlock: The hemlock is omnipresent, occurring everywhere in mixture with other species and in places—notably the northern third of Vancouver Island—forming over half the total stand. It averages smaller in size than the fir, but frequently attains 5 feet and over in diameter and 200 feet in height. In strength, ease of working, freedom from warp or shake, the wood of the inferior western hemlock is sharply distinguished from that of the eastern hemlock. The results of strength tests conducted by the United States Forest Service show conclusively that, on the basis of air-seasoned timbers, western hemlock ranks with Douglas fir or long-leaf pine. It is somewhat inferior to Douglas fir, however, in its resistance to decay.

The hemlock, in common with the western spruce and balsam, is a first class pulp wood and forms the basis for the rapidly developing pulp and paper industry, thus enjoying the advantage of being in demand as raw material for two separate industries. This advantage, which is just beginning to come into play, will in all likelihood bring western hemlock to the front where it belongs.

Silver Fir: The silver fir, otherwise known as balsam, and commonly called "larch" by the logging fraternity, runs about the same size as the hemlock, but is not as abundant, rarely forming more than 30 per cent of the stand over any considerable area. Its wood is softer than that of the hemlock, and is very even-grained and easily worked.

Sitka Spruce: The spruce occurs very sparingly on the southern portion of the coast, rarely forming over 15 per cent of the stand and generally less than 5 per cent. Farther north it is more abundant, but is rarely predominant, except on small areas along valley bottoms. In size and quality it rivals the fir and being light, strong for its weight, and of very even texture, has recently come into strenuous demand for aeroplane stock.

Yellow Cedar: The yellow cedar, also called cypress, is mostly confined to the less accessible locations and as yet has not come into the market to any considerable extent. It has all the good qualities of the cedars, including great durability and evenness of texture and possesses in addition a degree of strength and elasticity not to be found in any other cedar. Without doubt it is the coming canoe and boat builders' wood of the continent.

Fire Risk: Three factors minimize the fire risk in the forests of this region.

(a) The heavy rainfall.

(b) The topography of the country is most unfavorable to the running of fires over large areas. The timber occurs chiefly in comparatively narrow valleys, separated from each other by high mountains which present impassable barriers to fires.

(c) The durability and large size of the Douglas fir and the red cedar, together with the comparative absence of injurious boring insects on the burned-over lands, make it possible to log these timbers for many years after they have been killed by fire. The red cedar is especially good in this respect, and is sawn into the finest of lumber and shingles fifty years after being killed by fire.

Within the Douglas fir type the fire risk is, of course, considerable and demands systematic meas-

ures of prevention and control, which are effectively provided by a fund amounting to three cents per acre on all the privately held timberlands of the province, aggregating about ten million acres. One-half of this fund is collected from the timber owner as a fire protection tax and the other half is furnished by the provincial government.

As a result of these various controlling factors, the losses in standing timber by fire are practically negligible. Cut-over lands, here as elsewhere, frequently burn, but only exceptionally will the fire extend beyond the edge of the slashing.

The annual loss of standing timber by fire throughout the Douglas fir regions of the Pacific Northwest shown by detailed records for the past 10 years, averages 3/100 of one per cent.

In the cedar-hemlock type the fire risk is practically non-existent.

Titles: The timber of British Columbia has passed into private ownership under seven different forms of title. The respective areas held under the different title forms are as follows:

Timber limits.....	8,374,200 acres
Timber berths (railway belt).....	1,123,117 "
Crown Grants (fee simple).....	922,206 "
Timber leases	619,125 "
Pulp leases	354,399 "
Timber sales	64,440 "
Tan bark leases	32,252 "
Total.....	11,489,739 "

Timber License: Or as termed in the Forest Act, "special timber license," is the form of title under which about four-fifths of the privately owned timberlands of Canada are held. The British Columbia timber license vests in the holder all rights of property whatsoever in all trees, timber, and lumber cut from the "timber limit" to which the license applies, whether cut by the authority of the holder of the license or any other person, and gives to holder the right to seize wherever found any logs or any product manufactured from logs taken from the limit, also to institute actions for trespass and to recover damages for such trespass; the license holders' rights in these regards being the same as if the lands were owned in fee simple. (See Forest Act, Sec. 18.)

The British Columbia timber license is perpetual; that is to say, the holders' rights remain unimpaired "so long as there remains on the ground merchantable timber in sufficient quantity to make it commercially valuable." When, however, an owner has cut all the timber he desires to cut on any one timber limit, he may allow the title to that limit to lapse through the non-payment of the annual taxation without prejudice to his title to the other limits in the group. (See Forest Act, Sec. 21.)

Timber Limit: This is a term applied to the timberland held under a single Special Timber License and has a normal area of one square mile, being in this respect equivalent to a section, or 640 acres.

Timber Berth: Just as "timber limit" designates an area held under provincial timber license, so the term "timber berth" designates an area held under Dominion timber license. The government of the Dominion of Canada owns all timberlands for a distance of twenty miles on either side of the main line of the Canadian Pacific Railway. This 40-mile wide strip across the province is known as the "railway belt" and all timberlands alienated by the Dominion

government are known as "timber berths." The only essential differences between a timber berth and a timber limit are the differences between the Dominion and provincial regulations regarding lands held under timber license. Both titles are perpetual so long as merchantable timber remains on the ground. In the case of the provincial "timber limits," the taxation both as regards annual license fee and "royalty" has been definitely fixed until December 31, 1954, whereas the Dominion government has so far reserved the right to vary the taxation from time to time. At the present time the royalty on timber cut from timber berths is 50 cents a thousand for all species and log grades. The annual taxation, or "ground rent," is 5 cents an acre. As noted above, timber limits are limited in area to 640 acres. Timber berths are not so limited.

Crown Grants: The term "crown grant" as applied to timberlands signifies that such lands are held by the owner in fee simple. Timberlands have not been sold in fee by the Province of British Columbia since 1896. The total area of fee lands in 1916 is reported at 922,206 acres. The annual taxation on crown granted land varies with the assessed value, as is the case with similar lands in the United States, and the tendency in recent years has been to increase the assessed valuation of crown granted lands with a consequent increase in the amount of annual taxation.

Prior to April 7, 1887, lands sold in fee were not subject to a royalty reservation, which was first established at that time. All timber cut from lands crown granted since April 7, 1887, is subject to a flat royalty of 50 cents a thousand, regardless of species or log grades. As already noted, the sale of timberlands in fee was discontinued in 1896. Since that time, however, considerable areas have been crown granted for agricultural purposes, and these lands frequently carried more or less timber, which timber was also subject to the flat royalty rate of 50 cents per thousand. With the enactment of the Timber Royalty Act on April 30, 1914, timber standing on agricultural lands granted subsequent to January 1, 1914, was made subject to the same royalty charges as obtained on timber limits.

Timber Lease: Before the standard timber title known as "special timber license" had been adopted, there had been alienated some 600,000 acres of British Columbia timberlands by leasing. Unlike "timber licenses," all of which are subject to the same terms and conditions, these leases differ greatly from each other in the matter of annual taxation (varying from 5 to 25 cents per acre), length of term (varying from 15 to 30 years), and in other respects.

With few exceptions timber leases were made renewable in perpetuity under the legislation of 1901, or were converted into special timber licenses under legislation of 1915, and thus made perpetual to the timber land investor. Timber leases are of interest in that the terms under which they are held differ somewhat from the standard terms of the special timber license. In determining the value of these differences, the investor must always carefully read the text of the lease contract in question.

Pulp Lease: In addition to the above described timber leases, there are about 350,000 acres held under pulp lease for the supply of raw material for the various pulp and paper manufacturing companies. Timberland investors are not interested in this form of lease unless they are interested to purchase the pulp or paper manufacturing plant that goes with it.

The taxes on pulp leases are fixed at a lower rate than on other timberlands.

Timber Sales: In December, 1907, all timberlands in British Columbia not already disposed of were reserved from sale. In the Forest Act of 1912, however, provision was made for the sale of small areas of timber for immediate operation, the procedure adopted being closely akin to that used by the United States Forest Service in the sale of timber in the forest reserves. Since 1912 some 60,000 acres have been disposed of in this way, and there doubtless still remain many small areas which will be purchased by loggers under this provision of the Forest Act as stumpage values increase. The area being operated under timber sales amounts to less than one-fifth of 1 per cent of the British Columbia timberlands held in private ownership.

Tan Bark Lease: These leases are of minor importance and none of them have so far been operated for the tan bark they may yield. Where saw-logs are cut from pulp leases or tan bark leases, they are subject to practically the same taxation and other rules and regulations as obtain on lands held under the British Columbia special timber license above described.

License Fee: The license fee is similar to what is known in eastern Canada as the "ground rent," and is the annual taxation payable on a timber limit. The amount of the license fee is \$140 per timber limit west of the Cascade range and \$100 per limit east of the Cascade range and in the district of Atlin, and these figures are the maximum which may be charged up to December 31, 1954. The license fee is a flat tax per timber limit, regardless of whether or not the timber limit has full acreage (640 acres) and regardless of the amount or value of the timber standing thereon. In general this fixed annual taxation amounts to $\frac{1}{2}$ of 1 cent per thousand feet per annum on well selected timberlands.

Fire Protection Fund Tax: All timberlands in British Columbia, whatever the form of title under which they are held, are assessed $1\frac{1}{2}$ cents per acre per annum for the purpose of providing a fund for the protection of timberlands from fire. The provincial government contributes an additional sum equal to that contributed by the timberland owners, and the fund is administered by the British Columbia Forest Branch.

Royalty: The "yield tax" payable when the timber is cut, is known in British Columbia and elsewhere in Canada as the "royalty." The term "royalty" is an inheritance from ancient times when royalties were payable to the king. Now, of course, the royalty is the property of the province and is one of the chief sources of provincial revenue.

As in the case of the annual taxation, the "yield tax" or "royalty" has been fixed in advance until December 31, 1954. The present scale of royalties on the British Columbia coast is 85 cents a thousand feet log measure (as measured by the British Columbia log rule) on No. 1 and No. 2 fir, spruce, cedar, pine and cottonwood logs, and 50 cents a thousand feet for all other logs, including all grades of hemlock, balsam and cypress. The rate of royalty payable to the government may not be increased until the 5-year average wholesale selling price (f. o. b. mill) of all lumber cut in the province exceeds \$18.00 a thousand feet. Whenever the 5-year average wholesale price for all grades of lumber shall exceed \$18.00

the royalty will be automatically increased according to a schedule in the act, which provides for a sharing of excess profits between the province and the lumbermen, the province's share being 25 per cent of such excess until 1924, 30 per cent from 1925 to 1934, 35 per cent from 1935 to 1944, and 40 per cent from 1945 to 1954.

From the standpoint of the timberland investor, the reservation of a royalty or yield tax by the government is of great advantage inasmuch as it makes the state a partner with the investor in the ownership of the timber, thus reducing the amount of investment required to control a given amount of stumpage.

This can best be illustrated by assuming two tracts of equal intrinsic value on a per thousand foot basis—say \$1.50 per thousand; one located in British Columbia and the other in Washington; also assume an investment of \$300,000 in both cases:

	In Washington Per 1000 Ft.	In British Columbia Per 1000 Ft.
1. First Cost—		
Value of Stumpage, say.....	\$1.50	\$1.50
Less Royalty tax payable when timber is cut	None	.75
Actual purchase price payable by investor	\$1.50	\$.75
2. Carrying Charges—		
Interest on purchase price at 7% for, say, 10 years....	\$1.46	.73
Taxes for 10 years (about) .15		.05
Interest on Taxes at 7% (about)07	.03
	1.68	.81
Total cost for 10 years.....	\$3.18	\$1.56
Add Royalty to be paid when timber is cut.....	None	.75
3. Total Cost—		
Total items chargeable against the timber	\$3.18	\$2.31
Assume a realizable value at end of the 10-year term of, say, \$5 per thousand.....	5.00	5.00
Total cost as above.....	3.18	2.31
Net profit margin.....	\$1.82	\$2.69
Million feet purchasable with \$300,000	200 million	400 million
Total net profit on investment..	\$364,000	\$1,076,000
Advantage in favor of B. C. tract.....		\$ 712,000

Surveys: All boundary surveys in British Columbia are by law required to be made by licensed surveyors acting under regulations issued by the Surveyor General of the province. The surveyor is engaged and paid by the private owner and after the survey notes and plans have been accepted by the Surveyor General as meeting the regulations issued by him, notice of survey is published for a period of sixty days in the official "Gazette," after which period, if no adverse claims appear, the survey is considered final as between the government and the private owner.

The gazettement of a crown grant survey, together with the subsequent issuance of the grant itself, gives a final and unassailable title to the area included within the survey.

The provincial timber and pulp leases, and the Dominion timber berths, were all surveyed before title was granted and the titles to the timber included within the surveys as made is consequently safe against all attack except as such attack may be based on a provable existence of a prior crown grant title overlapping the area covered by the lease survey.

The timber limit surveys have all been made subsequent to the issuance of the corresponding timber license titles, which were based on a sworn statement by the staker that a single stake had been set for each limit, together with a description of the location of said stake and a description of the limit by "metes and bounds" with reference to the staking point. Consequently the gazettement of a timber limit survey affords no protection against future private claims of prior right based on a provable priority of staking. The timber limit owner is thus vitally interested in the stake locations and descriptions of all nearby unsurveyed limits staked prior to his own.

Practically all timber limits of importance in the Sheltered Waters Region have already been surveyed and gazetted, so the possibility of future title dispute with regard to these limits is negligible.

Log Scaling: All logs, plies and shingle bolts cut on lands under the jurisdiction of the province of British Columbia are required to be scaled or measured by a scaler licensed by the province; such license having been issued after a rigid examination. No timber is permitted to be sold except under a scale certificate issued by the scaler's office. The cost of this work is covered by a fee of 5 cents a thousand feet, board measure, for logs; 2½ cents a hundred lineal feet for piling and poles; 5 cents a cord for shingle bolts and similar products, together with the actual traveling expenses of the scaler. The scale bill issued by the forest department is considered prima facie evidence of the quantity of timber contained in any particular raft or boom.

If either party to the purchase or sale of such boom is dissatisfied with the measurement shown, a rescale can be demanded. In the event that such a rescale shows a considerable difference, it is then scaled the third time by either the supervisor of scalers or by a man appointed by him for that purpose. In this case there is no charge for the rescale. If, however, the rescale shows practically the same result as the former scale, an additional charge is made by the government and must be paid by the person demanding the re-scale.

Organization for handling the scaling system consists of a supervisor of scalers and his office staff, who are under the direction of a district forester. The licensed scalers who perform the actual work of counting and measuring the timber number sixteen in the Vancouver district, two in the Island district and one in the Prince Rupert district.

The output of the camp may be measured either at the point of production or at the point of sale, as may be desired by the seller. When any producer of logs desires to obtain a scale of his logs, he applies to the supervisor of scalers, either in person or by letter, and a scaler is sent out to measure up the boom. The result of this scale is turned into the supervisor's office and is figured up by the office staff there, and an official scale bill, together with an itemized statement of the logs, is furnished to the seller. This constitutes the basis of any bargain which may be made between the seller and the buyer

and also is the basis for the collection of royalty which accrues to the government. The royalty charge is borne in almost every case by the seller of the logs, although it is customarily paid by the purchaser and deducted from the purchase price. The scaling fee of 5 cents a thousand feet is shared between the buyer and the seller. There is a heavy penalty for buying, selling or in any way trafficking in logs which have not been scaled by a licensed scaler.

Log Towing: All logs moved to market by towing are first made up into "booms" or "rafts." The boom sticks are usually 66 feet long and are connected together by boom chains. The logs are arranged lengthwise within the enclosing boom sticks and the rows of boom sticks on either side of the boom are connected together by 66-foot swifters, which are logs that lie cross-wise on top of the logs in the boom and are secured at either end to the chains connecting the boom sticks. A log boom is ordinarily spoken of as containing five or six or more "sections" or "swifters," according as it has five or six or more pairs of boom sticks with their corresponding five or six or more swifters tying across the boom.

Over 90 per cent of the logs manufactured on the British Columbia coast are towed in booms by tugs to the mills, most of which are located near Vancouver. There are twenty-three separate towing companies engaged in this business, with a total of sixty-five tugs. The charge for towing or "towing rate," varies from 35 cents a thousand for a short distance trip up to \$2.00 for distances between 225 and 250 miles. The average towing distance for logs brought to the Vancouver market is about 130 miles and the average towing rate \$1.15. The tow bill is generally paid by the logger, the logs being sold delivered at mill all charges paid, including royalty as well as towing charges.

Even in these sheltered waters there are a few places, such as the Strait of Georgia near Vancouver and Johnstone Strait toward the upper end of Vancouver Island, where the sea occasionally gets too rough for safe towing in ordinary watersection booms. This risk is largely avoided by a careful watching of the barometer on the part of the tug captain and can be entirely avoided by making the logs into "Davis" booms, in which the logs are bundled lengthwise on a single layer of long logs woven into a flexible mat by wire cables. These Davis booms are used only where it is necessary to tow the logs across considerable stretches open to the sweep of the main Pacific Ocean. Their seaworthiness has been fully demonstrated and they would be more extensively used were it not for the extra cost of building the boom at the logging camp and breaking it down at the mill (which extra cost more than offsets the slight towing risk within the Sheltered Waters Region) and the fact that the open sea towing, such as that from the West Coast of Vancouver Island to Vancouver, is subject to storms which actually bother the tug more than the boom.

With the exception of hemlock, all the various species of timber float strongly and are not subject to loss from sinking logs. Hemlock logs vary considerably, but consistently float deeper than logs of other species and are subject to loss, not only from sinking, but also from the comparative ease with which an almost submerged hemlock log can duck under the confining boom stick when the sea gets a bit rough. This latter risk is largely controlled by arranging

the larger and more buoyant logs along the outside edges of the boom. The sinkage is also largely controlled by peeling those certain butt logs which the experienced logger can readily spot in the woods as liable to sink. This peeling of hemlock logs will cease to be a burden against the saw-log when the hemlock bark comes into value for tanning purposes. On the basis of present logging practice, the loss of hemlock logs from sinkage and ducking out of booms is probably about 5 per cent, possibly lower.

The total loss of logs in towing to Vancouver mills is not accurately known, but judging from such records as can be had showing a comparison between log tallies before and after towing, it is somewhere between one and two per cent.

Log Market: A glance at the map—opposite page 3—will show that one-third of the merchantable timbered area with nearly one-half of the total stand of timber in the province is directly tributary to the sheltered tide-water channels lying between Vancouver Island and the mainland. This geographical combination of "sheltered" waterways and numerous excellent harbors, flanked by heavily timbered lands, has resulted in a broad and active market for logs which in turn encourages a division between the logging and milling branches of the lumber industry, similar to that obtaining under somewhat similar conditions on Puget Sound and the Columbia River, in that most of the logs are produced by independent loggers who sell their logs to the mills on the open market. Practically all tide-water mills purchase a larger or smaller proportion of their logs from independent loggers and many mills purchase their entire requirements, having no timberlands or logging operations of their own. Naturally the timberlands tributary to these sheltered channels enjoyed an earlier development and are in greater demand than other coast locations. At the present time over 90 per cent of the log output of the British Columbia coast comes from the inside edge of Vancouver Island and adjacent mainland.

The trend of development in log production for each species of timber is well indicated by the accompanying chart showing official log scale returns for the Vancouver district, which includes the area from which logs are regularly towed to the Vancouver market and coincides closely with the "Sheltered Waters Region." It will be noted that the average monthly production of Douglas fir logs for 1914 was 32.8 million feet, a figure somewhat below normal because of the war influence during the latter part of the year. In 1915 the output fell to 15.2 million per month, reflecting the business depression common to all the lumber producing sections of the Pacific Northwest. In 1916 the monthly output rose to 27.8 million feet and for 1917 reached an average of 37.2 million feet, which is somewhat above normal for pre-war conditions.

The production of cedar logs shows a different trend, being plainly proof against the depressing influence so radically affecting Douglas fir. The average monthly output for 1914 was 12.0 million feet. For 1915 it rose to 14.0 million feet; for 1916 to 17.6 million feet and for 1917 to 18.8 million feet, a steady increase aggregating 57 per cent since 1914.

This showing, especially the 1917 increase, is particularly remarkable in view of the fact that cedar is not in demand for war purposes, as is Douglas fir and spruce. It is accounted for in part by the com-

paratively exclusive virtues of cedar as an "overcoat" wood (i. e. for siding and shingles) and the particular advantage of western cedar in its extremely light shipping weight and large proportion of clear, which, coupled with a markedly waning supply of Eastern cedar and cypress, have given the western cedar products a normally increasing market throughout the United States and Canada. A more specifically compelling reason, however, is the plainly apparent northward shift of cedar production from the Western Washington Region, which has been, and still is, contributing the bulk of the cedar output of North America, toward the Sheltered Waters Region of British Columbia.

The supply of cedar in Oregon is practically negligible. The forests east of the Cascade Range run 70 to 80 per cent yellow pine, with the balance chiefly sugar pine and Douglas fir. West of the Cascades, Douglas fir comprises 70 to 90 per cent of the forests, with the balance largely hemlock and spruce.

In Washington the percentage of cedar gradually increases northward from less than 5 per cent in Cowlitz and Wahkiakum counties on the Columbia River to 22 per cent in Whatcom County, which adjoins British Columbia. The percentage of Douglas fir shows a corresponding decrease from over 80 per cent on the Columbia River to 47 per cent in Whatcom County, where the remaining 31 per cent of the stand consists almost entirely of hemlock and silver fir. Throughout the state the cedar is everywhere mixed with Douglas fir and other species, rarely forming over one-third of the stand over any considerable area. The most notable exception to this was the heavy stand of nearly pure cedar on the coastal bench extending west from Port Angeles along the Strait of Juan de Fuca. This stand of cedar has now all been cut, but ten years ago it was providing logs for what was then the largest cedar manufacturing plant in the world.

In British Columbia, as has already been pointed out, predominantly cedar areas exist, many of them immediately adjacent to tide-water and within towing reach of Vancouver. The center of cedar production is simply and naturally shifting toward these areas.

The comparative scarcity of cedar on Puget Sound is plainly indicated by the accompanying charts showing log prices on the Puget Sound and Vancouver markets since 1904. The Vancouver prices average \$3.73 lower for the years 1905 to 1909 inclusive, \$2.34 lower for the years 1910 to 1913 and \$2.15 lower for the years 1914 to 1917. The continuous decrease of this differential, which decrease has been added to the Vancouver price, was at first largely the result of an increase in stability and efficiency on the part of the Vancouver cedar manufacturing plants, but since 1910 this differential has been shifting over into an increase of stumpage value, where it belongs.

The accompanying charts also show that this price differential between the two markets is confined to cedar; the Douglas fir and hemlock prices running practically the same on both markets. This showing is further evidenced by the movement of logs from British Columbia to Puget Sound during the past three years as a result of lifting the embargo on the export of logs. Douglas fir and hemlock logs, although exportable without tax, failed to move. Cedar logs, however, although subject to an export tax of \$1.15 on No. 1, 65c on No. 2 and 50c on No. 3 logs and an additional towing charge varying from 25c to \$1.50

according to destination, have been exported regularly, even to points as far south as Everett and Seattle.

Another noteworthy feature shown by these log price charts is that cedar prices have not only held consistently above Douglas fir, especially on the Puget Sound market, but have shown a marked tendency to resist price depressing influences. Thus in 1914 and 1915, when the annual average price of Douglas fir logs fell \$1.40 on the Vancouver market and \$1.35 on the Puget Sound market, cedar logs fell only 30c on the Vancouver market and 25c on the Puget Sound market.

On the chart showing log scale returns for the Vancouver district, no account is taken of cedar shingle bolts, poles, piles and ties. As shingles are manufactured from logs as well as bolts, it is proper to add the bolt production in considering cedar output. The shingle bolts scaled from the Vancouver district in 1917 amounted to 212,710 cords, which at 500 board feet to a cord is equivalent to 106 million feet. Including this item, the total cedar output for the Vancouver district was 332 million feet, which is 34.6 per cent of the total output of 957 million feet of logs and bolts for the district. The total cedar log and bolt consumption of Western Washington for 1917 was more than double that for the coast of British Columbia.

Referring again to the chart showing log scale returns for the Vancouver district, the output of hemlock and larch (silver fir) shows to an even greater degree than cedar a disregard of the depressing influence attendant on the commencement of the war, increasing from a monthly average of 3.8 M feet in 1914 to 6.1 M feet in 1915, 7.9 M feet in 1916 and 10.8 M feet in 1917, a total increase of 184 per cent in three years. This increase has resulted in part from a special demand for boxes in which to ship munitions of war, but more notably from a rapid expansion in the pulp and paper industry and an expanding demand for hemlock as building material throughout the middle west, this latter demand being encouraged by the slightly lighter shipping weight of hemlock as compared with Douglas fir.

The rapid expansion of the British Columbia pulp and paper industry, as indicated by an increase in value of output from \$3,520,000 for 1916 to \$7,447,680 for 1917, is based on a world-wide increase in paper consumption, accentuated by an already acute shortage of raw material in the pulpwood region of north-eastern United States and Eastern Canada, which has been, and still is, producing the bulk of the paper consumption of North America.

This shortage, coupled with the growingly attractive markets of South America, Australia and the Orient, has led to a recognition of the natural advantages of British Columbia, whose supply of pulpwood is not only greater in amount than that of Washington or Oregon, but is also more advantageously situated, the bulk of it being within a few miles of her many thousand miles of coast line with plenty of water power handy to tide-water and cheap to develop.

Six years ago the first successful paper mill in British Columbia had not yet begun to operate. Today there are four operating pulp and paper companies, all on the coast, with an aggregate capital of \$26,000,000 and an aggregate daily output of 300 tons of paper and 140 tons of sulphite and kraft pulp. New plants and additions now under construction will soon increase this daily output to 420 tons of

paper and 265 tons of sulphite and kraft pulp, consuming logs at rate of 190 million feet per annum.

Already the pulp and paper mills are actively competing with the sawmills for hemlock, silver fir and spruce logs and it is likely that this competition will in time bid up the price of these species to figures which only the pulp and paper mills can afford to pay, thus repeating the history of the pulpwood regions of eastern United States and Canada, where mills unfavorably situated with reference to the remaining supply of standing pulpwood timber are to-day paying as high as \$25 a cord for their raw material a price equivalent to over \$50 a thousand board feet on a basis of lumber measurement.

It is noteworthy that British Columbia is rapidly outstripping Washington and Oregon combined in its production of pulp and paper. The supply of pulpwood in Washington is nearly as great as in British Columbia, but the relative location of pulpwood, water power, and tide-water is not so favorable. The pulpwood species are widely mixed in minor proportions with Douglas fir and predominate only in the less accessible situations where the ground is mostly steep and rough and the logging conditions generally unfavorable, while the available water powers are not so handy to off-shore shipping facilities, which are, of course, more essential than rail connection to a coast paper mill aiming at anything beyond a local market. A project for a paper mill with a daily capacity of 400 tons of newsprint, with the entire output already under contract to Eastern newspaper publishers, has recently succeeded in lining up two water power possibilities, one within reach of Seattle and the other on the Olympic peninsula, but after over a year's effort have not yet been able, even by drawing on the U. S. forest reserves, to get together a sufficient accessible holding containing the billion feet of pulpwood considered as the essential minimum demanded to justify the expenditure required for the plant. This minimum would, of course, not be sufficient to run the mill more than 10 or 12 years, but would give a large degree of market control in buying pulpwood logs on the open market. Pulp and paper mills here as elsewhere, are strongly inclined to reserve their own timber and draw largely on the open market for their raw material.

The production of spruce, as shown on the chart, has responded only slightly to the tremendous and largely exclusive demand for this species as aeroplane stock. This is accounted for by its scattering occurrence in mixture with other species making it difficult to materially increase spruce production without a large and unwarranted increase in the production of other species. This situation has been met by shifting operations to areas of timber hitherto unattractive to the logger but containing considerable proportions of spruce. Such areas have been located on the west coast of Vancouver Island, on the mainland north of Vancouver Island and on the Queen Charlotte Islands. This shifting of operations, which began about one year ago and has affected the non-military cedar producers rather than the Douglas fir operators has, of course, been induced by the military authorities, partly through its control of logging materials such as wire rope, but largely by means of favorable contracts with a minimum profit guaranteed to the logger, these contracts generally calling for the delivery of nothing but No. 1 and No. 2 spruce logs.

Lumber Market: The stability and rapidly expanding nature of the markets for British Columbia

forest products is well evidenced by the following figures showing the total scale of logs, bolts, piles, poles and ties for the province since 1903. The most notable feature of this showing is the fact that the 1917 production was double that of the well-remembered banner year of 1907, a record that no competing state or province can even approach.

	Board Feet:
1903	317,551,151
1904	348,031,790
1905	473,713,986
1906	508,069,969
1907	846,000,000
1908	659,000,000
1909	775,000,000
1910	1,040,000,000
1911	856,048,000
1912	1,105,392,000
1913	1,227,466,000
1914	883,436,000
1915	1,017,683,000
1916	1,280,263,000
1917	1,647,000,000

It is further noteworthy that this increased production has been sold largely in the prairie market both in Canada and the United States in competition with the waning production of Eastern species and has continued in spite of the reduction in waterborne shipments caused by the war. The offshore shipments from British Columbia in 1917 amounted to only 44 million feet.

Douglas fir is today actively competing with eastern species as far east as Minnesota where it constitutes 33 per cent of all the lumber handled by the retail yards, Iowa 18 per cent and Wisconsin 7 per cent. Cedar products and the larger sizes of Douglas fir are being shipped by rail in increasing quantities all the way to the Atlantic seaboard.

The possibilities of overseas markets after the war are, of course, very promising, but it is encouraging to bear in mind that the future expansion of the British Columbia timber industries is assured by markets already within her reach by rail.

Passing by the much discussed opportunity offered by the Panama Canal for bringing Pacific Coast timber to Atlantic Coast markets, the less discussed possibilities of Australia and China are at least worthy of mention.

Australia has practically no softwoods of her own which accounts for the fact that between 1903 and 1913 the value of lumber and logs imported into the Commonwealth jumped from \$4,345,737 to \$12,945,012, an increase of 198 per cent. The normal annual importation of lumber into Australia before the war was about 350 million feet, of which over two-thirds came from the Pacific Northwest. This amount shrunk to 200 million in 1916 and will show a further shrinkage for 1917. This repression of building activities will bring about a corresponding expansion after the war.

In the past British Columbia has had little share in the Australian lumber export trade, owing chiefly to the more favorable charter rates obtainable from the return cargo ports of California, Oregon and Washington, and a somewhat greater efficiency and co-operation on the part of the American mills. This handicap has already begun to diminish and British Columbia is definitely in line for an increasing share of the Australian trade after the war, even without the proposed differential tariff in favor of British

Columbia. The possibilities of this proposed differential tariff are indicated by the fact that under a preferential tariff with South Africa, amounting to approximately 2½ per cent of the value of the lumber shipped, British Columbia has supplied 64 per cent of all lumber imported by that country.

As regards China and the Orient generally, the best indication of possibilities is the recent building of a large sawmill near Vancouver by the Robert Dollar Steamship Company of San Francisco for the purpose of supplying 50 million feet annually for the Oriental trade.

Shingle Market: The trend of the market for British Columbia shingles is also measured by increasing production and prices. The total output of all grades of shingles by British Columbia mills for 1917 was 2,278,205,000 equivalent to about 225 million board feet, the market value f. o. b. mill being \$7,609,854. Of the total quantity the United States market absorbed the record quantity of 1,411,420,378 shingles, valued at \$5,182,856 while the Canadian trade took 866,785,000, valued at \$2,426,998. That records were broken is established by the figures for 1916, when the total output of the B. C. mills was 1,900,000,000 shingles.

This showing is indicative of the northward shift of cedar production already discussed under log market.

Tariffs: At the present time the largest single market for British Columbia lumber is the prairie provinces of the Canadian middle west. American lumber planed on one side is admitted duty free to Canada under the regular tariff, but it is subject to a 7½ per cent ad valorem war tax, which in effect amounts to that much protection to the British Columbia manufacturer in catering to the Canadian customer.

Next to the Canadian prairie provinces, the United States presents the largest market for British Columbia forest products, and this makes the American tariff a matter of prime importance. The following list enumerates the items which are admitted to the United States free of duty: Logs, timber, round unmanufactured, hewn or sawed, sided or squared; pulp woods, kindling wood, firewood, hop poles, hoop poles, fence posts, handle bolts, shingle bolts, gun blocks for gunstocks, rough hewn or sawed, or planed on one side; hubs for wheels, posts, heading bolts, stave bolts, last blocks, and all like blocks or sticks, rough hewn, sawed or bored; sawed boards, planks, deals and other lumber, not further manufactured than sawed, planed, and tongued and grooved; clapboards, laths, pickets, palings, staves, shingles, ship timber, ship planking, broom handles, sawdust and wood flour; mechanically ground wood pulp, chemical wood pulp, bleached or unbleached and paper; beaded ceiling and mouldings have also been held to be free from duty. Railroad ties and telephone and telegraph poles bear a duty of 10 per cent, while empty packing boxes, packing box shooks and veneers of wood pay a duty of 15 per cent ad valorem.

The only other tariff feature which is of importance from the standpoint of the British Columbia timberland owner is the export tax levied by the province on certain grades of logs exported in the round to American mills. Prior to the war, the province required that all logs cut from timber limits, timber leases, timber sales and certain classes of crown grants should be manufactured into lumber within the province. As a war measure, however, the export of logs has been permitted, subject to an export

tax on cedar, spruce and pine amounting to \$1.15 a thousand for No. 1 logs, 65 cents for No. 2 and 50 cents for No. 3 logs. This tax is, of course, additional to the regular royalty charge. Fir, hemlock and silver fir are exportable in the log under the same provision without additional taxation.

This matter of log export has, of course, been a bone of contention between the loggers and the millmen. At a recent conference of representatives of logging, shingle, sawmill and box factory interests held with the Minister of Lands at Victoria a compromise was reached and a war advisory committee appointed, which will consider the situation from month to month and report. An official memo has been issued dealing with the situation and the resolutions carried at the round-table conference have been approved by Hon. T. D. Pattullo, Minister of Lands. They are as follows:

"1. That to provide a channel of information for each industry concerned, as well as a method for keeping in continuous touch with the complex factors and changing conditions affecting log supply and demand, there be formed a war advisory committee. This committee to meet once a month and to be composed of nine members—three for the lumber manufacturers, three for the loggers and three for the department. An emergency sub-committee, consisting of one representative for each interest, to meet, when necessary during each month, the manufacturers' representative being chosen each month from the industry most likely to be affected by current conditions.

"2. That a fresh start for the consideration of the question of log export be made as from the date of the present meeting, March 20; that the matter be considered at each monthly meeting of the committee in the light of facts as they then exist, and that the recommendations made to the minister at each meeting cover a period of one month ahead.

"3. That, except for logs covered by export permits issued up to March 24 for booms with tugs alongside by that date, there be not allowed up to the next meeting, on April 22, any export of hemlock or fir, nor any export of cedar other than of low-grade cedar booms, approved by the emergency sub-committee."

Association Activities: The British Columbia Loggers Association has been in existence for many years, and became an incorporated society on August 5, 1907.

Early in 1916, the association felt that the time had come for expansion and it then secured its present commodious offices in the Rogers Building and employed Mr. Armstrong as Secretary, he being the first secretary to give his entire time to the work of the association.

The active membership of the association includes 45 logging companies, producing approximately 70 per cent of the total cut on the British Columbia coast. Besides the active members, there are 21 associate members, who, although not actively engaged in logging, are interested in the prosperity of the logging business and are glad to lend a hand to promote the welfare of the association.

The lumber manufacturers of British Columbia have two well organized and carefully administered associations, similar in character to the lumber manufacturers' associations of the United States, viz., the Mountain Lumber Manufacturers' Association, which cares for the interests of the mills in the interior

of the province, and the British Columbia Lumber & Shingle Manufacturers Limited, which cares for the interests of the tidewater district.

The membership of the coast association includes 42 mills, the output of which comprises about 90 per cent of the total cut of the tidewater mills.

The principal activities of the association are along the lines of standardizing the grading of logs and lumber, compiling statistics as to orders, production, and shipments of lumber and other market data. Three inspectors of weights are employed to check the weighing of lumber at the principal railway weighing stations. This inspection has resulted in reducing claims for freight overcharge by 80 per cent in the last four or five years.

The association has not as yet undertaken much work in the line of trade extension other than to co-operate with the British Columbia Forest Branch.

The Shingle Agency of British Columbia had its inception about six years ago, when a body of British Columbia shingle manufacturers banded themselves together in the interests of the industry in this locality. Then, as now, the principal object of the organization was to keep its members informed as to prevailing conditions and to extend the market for British Columbia cedar shingles. The present membership includes 49 mills cutting about 90 per cent of the British Columbia shingle output.

No trading in shingles is done through the association, so that the duties of the secretary, aside from the clerical work which the position involves at meetings, is largely that of keeping the members informed by circular letters, etc., concerning market prices and conditions and any other items of interest to shingle manufacturers which come to his attention. A semi-monthly barometer report, compiled from information collected from the various mills, is issued. This report shows in figures and pictorially the current relation to each other of production, orders, and shipments and has proved very valuable.

This agency, in common with other similar organizations, makes possible the handling by shingle manufacturers as a unit of important questions such as freight rates, car shortages, labor conditions, etc.

Governmental Co-operation: The administration of all forest work in the province of British Columbia is cared for by the Forest Branch of the Department of Lands.

The Forest Branch was organized with the assistance of the late Overton W. Price, of the United States Forest Service, who, until his death, held the position of consulting forester.

The total staff of the branch numbers about 200, of whom some 70 are at present on active military

service. The technical staff consists of the heads of departments, district foresters, and forest assistants, numbering altogether about 28 technical men, nearly half of whom are at present on active military service.

Unlike many forestry departments, in various states, whose function is chiefly, sometime wholly, advisory, the British Columbia Forest Branch, is a thoroughly business-like organization and has large business interests to care for, some of which are indicated below:

The income of the Forest Branch, which cares for the collection of all forest taxes, averages about \$2,600,000 per annum, or about 26 per cent of the total provincial revenue. The cost of administering the forest work averages about \$320,000 per annum, leaving a net revenue of over \$2,250,000 which is perhaps the largest net forest revenue of any forest department in America.

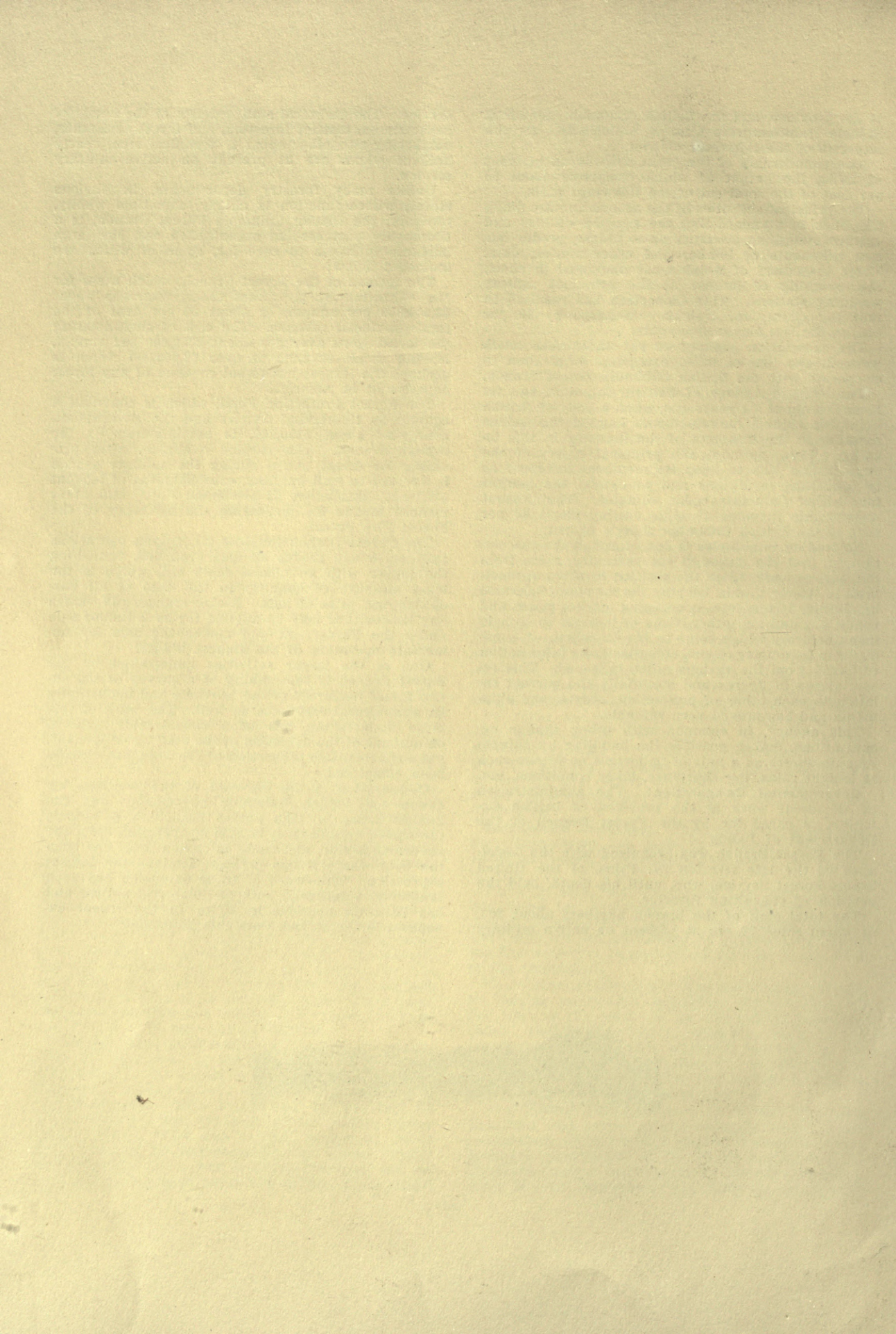
The Forest Protection Fund, which is contributed equally by timberland owners and the government, averaging about \$290,000, is administered by the Forest Branch. The surplus available, after providing for forest patrol during the summer season is devoted to trail building, establishment of lookout stations, installation of telephone lines, and other modern means for increasing the efficiency of the Forest Fire Patrol.

The Forest Branch inspects all logging operations and scales and grades all logs produced, furnishing the logger with an official scale bill, which is the legal measure of quantity in the case of all purchases and sales of logs. It also cruises and values any timber that may be applied for as a timber sale under the Forest Act and makes the sale for immediate operation to the highest bidder.

One of the larger activities undertaken by the Forest Branch is the making of a survey of the entire forest resources of the province and incidentally its agricultural resources as well. The work of this large undertaking has been considerably delayed on account of the depletion of the staff by enlistment, but a considerable proportion of the work has already been completed.

Co-operation is the key-note of the relations between the British Columbia government and the lumber industry. The Forest Branch is, of course, the active organization in this co-operation from the government side, and trade extension work has been the field where it has perhaps attained the largest expression. This work of trade extension has been conducted vigorously, both at home and abroad and has been an appreciable factor in the recent expansion in the British Columbia industries.





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